EUROPEAN PATENT OFFICE

Patent Abstracts of Japan

PUBLICATION NUMBER : 11067766
PUBLICATION DATE : 09-03-99

APPLICATION DATE : 19-08-97
APPLICATION NUMBER : 09222610

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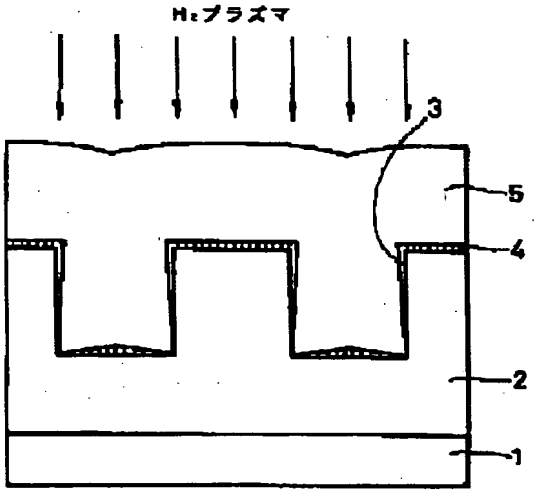
INT.CL. : H01L 21/3205 H01L 21/203

TITLE : METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE



ABSTRACT : PROBLEM TO BE SOLVED: To provide a method for manufacturing a semiconductor device, which can improve the performance of burying a Cu film and prevent an increase in resistance of wiring and a decrease in reliability by effectively removing a natural oxide film formed on the surface of a Cu film or a Cu alloy film and reflowing the Cu effectively, when the Cu or the Cu alloy is buried in grooves or holes by a reflow method.

SOLUTION: After a wiring groove 3 is formed in an interlayer insulating film 2 formed on a Si substrate 1, a TiN/Ti film 4 and a Cu film 5 are formed sequentially on the entire surface of the interlayer insulating film 2 by a sputtering method. Next, hydrogen plasma produced by an electron cyclotron resonance having a reducing action is applied to the surface of the Cu film 5 to reduce and remove a natural oxide film formed on the surface of the Cu film 5 and to reflow the Cu by heating the Si substrate 1 to about 400°C. Next, the Cu film 5 and the TiN/Ti film 4, except the interior of the wiring groove 3, are removed in sequence by a chemical mechanical polishing method to form a groove wiring.